

1. Mars Solar Conjunction

Prelims: Science & Technology- Space Technology

Mains: GS-III- Science and Technology - developments and their applications and effects in everyday life Achievements of Indians in Science & Technology; Indigenization of Technology and Developing New Technology.

Why in News?

- ▶▶ For more than a week, the daily communication between Earth and Mars will go silent.

Mars Solar Conjunction:

- ▶▶ On the surface of Mars are NASA's Curiosity rover and InSight lander.
- ▶▶ Above Mars are several orbiters, including India's Mars Orbiter Spacecraft (Mangalyaan), which has completed its official mission life but remains in orbit.
- ▶▶ Antennas on Earth and those on active spacecraft on or around Mars regularly exchange data. Now this will pause because of a phenomenon called Mars solar conjunction.
- ▶▶ For NASA's spacecraft, this will happen between August 28 and September 7.

Causes:

- ▶▶ During Mars solar conjunction, Mars and Earth will be on opposite sides of the Sun.
- ▶▶ The Sun expels hot, ionised gas from its corona, which extends far into space.
- ▶▶ During solar conjunction, this gas can interfere with radio signals when engineers try to communicate with spacecraft at Mars, corrupting commands and resulting in unexpected behaviour from those space explorers.
- ▶▶ When Mars disappears far enough behind the Sun's corona that there is increased risk of radio interference, engineers hold off on sending commands. Solar conjunction occurs every two years.

What it means for Mars Missions?

- ▶▶ This time, the hold on issuing commands — called a “command moratorium” — will run from August 28 to September 7, NASA said.
- ▶▶ All of this means that there will be a temporary pause in the stream of raw images available. Once conjunction is over, the spacecraft will beam the data they have collected
- ▶▶ In 2015, the conjunction period for Mangalyaan had lasted for more than a month — from May 27 to July 1.